

I Claim:

1. A parachute supported aircraft, which comprises:  
    (a) a frame having at least one seat for carrying at least a pilot;  
    (b) a parachute forming a collapsible and inflatable wing;  
    (c) a plurality of riser lines connecting the parachute to the frame; and  
    (d) means for providing controlled wing collapse and inflation during landing and takeoff respectively.

2. The aircraft of claim 1, wherein the control means is selectively operable by the pilot.

3. A parachute supported aircraft, which comprises:  
    (a) a frame having at least one seat for carrying at least a pilot;  
    (b) a parachute forming a collapsible and inflatable wing;  
    (c) a plurality of riser lines connecting the parachute to the frame; and  
    (d) at least one sleeve supported for vertical movement upwardly and downwardly relative to the frame, the sleeve being located relative to the frame and the parachute such that the riser lines pass through the sleeve as the riser lines extend between the parachute and the frame, wherein the sleeve as it rises relative to the frame progressively gathers in the riser lines to thereby collapse the wing and the sleeve as it lowers relative to the frame progressively releases the riser lines to allow expansion of the riser lines to permit the wing to inflate.

4. The aircraft of claim 3, further including at least one mast extending upwardly from the frame, and wherein the sleeve is supported from the mast.

5. The aircraft of claim 4, wherein the sleeve is supported from the mast for vertical movement relative to the mast.

6. The aircraft of claim 5, wherein the mast includes a first pulley, and further including at least one control cable extending from the frame up around the first pulley on the mast and then downwardly to connect to the sleeve for controlling vertical movement of the sleeve relative to the mast.

7. The aircraft of claim 6, wherein the control cable is connected to a winch on the frame for winding up the control cable or for paying the control cable out, the control cable pulling the sleeve upwardly relative to the mast as the control cable is wound up on the winch and the control cable permitting the sleeve to lower relative to the mast as the control cable is payed out from the winch.

8. The aircraft of claim 7, wherein the winch is selectively operable through a winch control switch to allow the pilot to selectively move the sleeve upwardly and downwardly relative to the mast to thereby manually control the collapse and inflation of the wing.

9. The aircraft of claim 6, wherein the mast includes a second pulley, and further including a wing elevating cord extending from the frame up around the second pulley on the mast and then rearwardly to connect to the wing for pulling the wing upwardly relative to the mast to help elevate the wing into a generally horizontal, overhead flight position.

10. The aircraft of claim 9, wherein the wing elevating cord extends adjacent to the pilot's seat for allowing the pilot to grab and pull downwardly on the cord to help elevate the wing.

11. The aircraft of claim 10, wherein the wing elevating cord is connected to a tensioning device on the frame for taking up any slack created in the wing elevating cord as the pilot grabs and pulls downwardly on the cord.

12. The aircraft of claim 9, wherein the wing formed by an inflated parachute has upper and lower leading edges, and wherein the wing elevating cord connects to the upper leading edge of the wing.

13. The aircraft of claim 9, wherein the wing elevating cord attaches to the wing at two laterally spaced points.

14. The aircraft of claim 13, wherein the wing has laterally spaced wing tips on either side of a longitudinal centerline of the wing, and wherein each point of attachment of the wing elevating cord to the wing is located outboard on the wing between the centerline of the wing and one wing tip.

15. The aircraft of claim 13, wherein the wing has laterally spaced wing tips on either side of a longitudinal centerline of the wing, and wherein each point of attachment of the wing elevating cord to the wing is located outboard on the wing at least midway between the centerline of the wing and one wing tip.

16. The aircraft of claim 4, further including a pair of masts extending upwardly from the frame, and further including a pair of sleeves with one sleeve being supported from each mast with each sleeve having at least a portion of the riser lines passing therethrough.

17. The aircraft of claim 16, wherein the masts extend laterally outwardly relative to the frame as the masts extend upwardly such that the distance between the masts increases as the masts extend upwardly.

18. The aircraft of claim 17, wherein the masts are also inclined forwardly relative to the frame.

19. The aircraft of claim 16, wherein the masts are inclined forwardly relative to the frame.

20. The aircraft of claim 3, further including a selectively operable control cable extending between the frame and the sleeve for adjusting the vertical position of the sleeve relative to the frame.

21. The aircraft of claim 20, further including a selectively operable wing elevating cord extending between the frame and the parachute for helping pull the wing into an overhead flight position.

22. The aircraft of claim 3, further including a selectively operable wing elevating cord extending between the frame and the parachute for helping pull the wing into an overhead flight position.

23. The aircraft of claim 3, wherein the frame carries an engine and propeller to allow the aircraft to be self-powered.

24. The aircraft of claim 23, wherein the engine and propeller are unshrouded.

25. The aircraft of claim 3, wherein the frame includes floats to allow the aircraft to be operated on a body of water.

26. A parachute supported aircraft, which comprises:

(a) a frame having at least one seat for supporting at least a pilot;

(b) a parachute coupled to the frame by a plurality of riser lines for allowing the parachute to inflate and form a wing for lifting the frame;

(c) a pair of upwardly extending masts coupled to the frame, wherein each mast supports a vertically movable sleeve receiving a group of riser lines; and

(d) control cables connected to a winch to raise and lower the sleeves to allow the pilot to selectively collapse and inflate the wing in a controlled fashion.

27. The aircraft of claim 26, further including a wing elevating cord selectively usable by the pilot to help pull on the parachute to aid the parachute in transitioning from a generally vertical, partially inflated, lockout position to a generally horizontal, more inflated, flight position.

28. A parachute supported aircraft, which comprises:

(a) a frame having at least one seat for carrying at least a pilot;

(b) a parachute connected to the frame by a plurality of riser lines anchored at one end to the frame, the parachute forming a collapsible and inflatable wing;

(c) at least one mast extending upwardly from the frame, wherein the parachute is flexibly tethered to the

mast between the frame and the parachute as the riser lines connect the parachute to the frame.

29. The aircraft of claim 28, wherein the mast is inclined forwardly relative to the frame.

30. A parachute supported aircraft, which comprises:

(a) a frame having at least one seat for carrying at least a pilot;

(b) a parachute connected to the frame, the parachute forming a collapsible and inflatable wing; and

(c) a wing elevating cord extending from the frame to the parachute, the wing elevating cord being selectively usable by the pilot to help pull on the parachute to aid the parachute in transitioning from a generally vertical, partially inflated, lockout position to a generally horizontal, more inflated, flight position.

31. A powered parachute supported aircraft, which comprises:

(a) a frame having at least one seat for carrying at least a pilot;

(b) a parachute forming a collapsible and inflatable wing;

(c) a plurality of riser lines connecting the parachute to the frame; and

(d) an engine and propeller to allow the aircraft to be self-powered, wherein at least the propeller is unshrouded.

32. The aircraft of claim 31, wherein both the engine and propeller are unshrouded.

33. The aircraft of claim 31, wherein the frame includes floats to allow the aircraft to be operated on a body of water.

34. A method of operating a parachute supported aircraft having a frame supported in flight by a parachute comprising a collapsible and inflatable wing, the parachute being connected to the frame by a plurality of riser lines, which comprises:

maintaining tension in the riser lines during and immediately after landing as the wing collapses to avoid tangling the riser lines.

35. The method of claim 34, wherein the tension maintaining step comprises passing the riser lines through a vertically elevated suspension point on the frame such that the weight of the parachute hanging downwardly from the suspension point creates the tension in the riser lines after the wing collapses following landing.

36. The method of claim 35, wherein the tension maintaining step further comprises elevating the suspension point relative to the frame as the wing collapses.

37. The method of claim 36, further including lowering the suspension point relative to the frame during taxiing and takeoff to permit the wing to inflate.

38. The method of claim 37, wherein dual suspension points are used with a portion of the riser lines passing through one suspension point and a remaining portion of the riser lines passing through the other suspension point, and further including the step of synchronizing the elevating and lowering of the suspension points to one another.

39. A method of operating a parachute supported aircraft having a frame supported in flight by a parachute comprising a collapsible and inflatable wing, which comprises:

controlling the inflation of the wing during taxiing and takeoff and controlling the collapse of the wing during and immediately after landing.